



Human Systems integration division



Human Fatigue Countermeasures: Aviation

Objective

To minimize the adverse effects of fatigue and maximize performance and alertness during aerospace flight operations, thereby maintaining and improving the safety margin.

Approach

Develop fatigue countermeasures, educational tools, incident/accident investigation methods, and provide technical input to national policy considerations. Conduct research that capitalizes on laboratory-based experimental research, flight simulations, and field research during regular operations.



Impact

Reduction of fatigue and related performance problems through research on rest and activity periods, duty/rest cycles in commercial aviation, and alertness management technologies. Examples include:

- A video-based, objective, real-time, alertness monitoring system based on percentage of eyelid closure over the pupil (PERCLOS), has been tested for feasibility in the NASA Ames 747-400 simulator during a long-haul nighttime flight.
- Commercial aircraft capable of flying 18-21 h will be in operation within the next few years. Research is being conducted to determine pilot performance over these extended periods and examine the efficacy of rostered bunk sleep in this environment.
- An airline scheduling assistant is being developed as a research tool to predict alertness in pilots on varying trip schedules.
- Research concerning fatigue in flight operations has been provided to FAR Part 121 operations for many years. In order to address the unique issues in general aviation, a technical memorandum has been published and an interactive Macromedia Flash- based web educational tool has been developed.
- With support from the FAA, 34 Alertness Management in Aviation Workshops have attracted 690 participants from 240 organizations from 21 countries. The materials are used in more than 6,300 classes taught by NASA-trained individuals reaching over 116,000 flight crew and others.

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